IN THE CLAIMS

Please amend the claims as follows:

1-2. (Canceled)

3. (Currently Amended) A computer-implemented method comprising:

identifying a candidate reuse region of a software program;

determining an input set for the candidate reuse region, wherein the input set ~~comprises~~ includes a plurality of input registers for storing input values of the candidate reuse region;

instrumenting the software program to, when executed, sample set-values for the input set, wherein each set-value ~~comprises~~ includes an input register value for each of the plurality of input registers~~, wherein during the execution, the sampling is performed every S occurrences of the set-values, and wherein S is an integer greater than 1~~;

~~for each set-value, combining each of the input register values into a single value; and~~

executing the instrumented software~~;, wherein the executing includes~~

tracking, during the execution, a number of times a set-value is encountered; and

selecting, based on the tracking, the candidate reuse region as a computation reuse region.

4-5. (Canceled)

6. (Currently Amended) The computer-implemented method of claim 3, wherein the input-set comprises a plurality of input registers, and each set-value comprises an input register value for each of the plurality of input registers, and wherein the instrumenting of the software program includes,

inserting combine instructions into the software program, the combine instructions which, when executed, will combine each of the input register values into a single value; and

inserting index instructions into the software program, the index instructions which, when executed, will index into a data structure of profile indicators using the single value.

7. (Currently Amended) The computer implemented method of claim 3, wherein the instrumenting of the software program includes inserting profile instructions to profile the top N occurring set-values, where N is ~~chosen as~~ based on a function of an expected number of reuse instances.

8. (Canceled)

9. (Currently Amended) A machine readable medium including instructions ,which when executed by a machine, cause the machine to perform operations according to the computer implemented method of claim 3. ~~for a method of profiling software, the method comprising:~~

~~identifying a candidate reuse region of the software;~~

~~determining an input set for the candidate reuse region, wherein the input set comprises a plurality of input registers;~~

~~instrumenting the software to, when executed, sample set-values for the input set, wherein each set-value comprises an input register value for each of the plurality of input registers; for each set-value, combining each of the input register values into a single value, and wherein during the execution, the sampling is performed every S occurrences of the set-values, and wherein the sampling is not performed for every occurrence of the set-values; and~~

~~executing the instrumented software, wherein the executing includes tracking a number of times a set-value is encountered.~~

10. (Canceled)

11. (Currently Amended) A computer-implemented method comprising:

determining whether a software program region is a computation reuse region, wherein the determining includes,

periodically sampling a set of registers to obtain register values, wherein the register values are input values of the software program region;

~~determining an occurrence frequency of the register values;~~

combining the register values into a single set-value;

determining an occurrence frequency of the single set-value; and

storing the occurrence frequency and the single set-value in a data structure;

basing the determination of whether the software program region is the computation reuse region on the occurrence frequency.

12. (Currently Amended) The computer-implemented method of claim 11, wherein the periodically sampling of the set of registers includes sampling ~~a plurality of~~ ones of the set of registers to obtain a set-value every S occurrences of the software program region, wherein S is a sampling period, wherein S is greater than 1, and wherein S is chosen so that a statistically valid number of registers are sampled.

13. (Currently Amended) The computer-implemented method of claim 12 further comprising:

identifying a group of control equivalent candidate region entries and candidate load instructions;

inserting predicate instructions prior to ones of the group, wherein the predicate instructions set a predicate register every S occurrences; and

inserting profiling instructions at each of the control equivalent candidate region entries and candidate load instructions, wherein the profiling instructions are predicated on the predicate register.

14. (Currently Amended) The computer-implemented method of claim 12, wherein the storing includes,

accessing a record in the data structure as a function of the set-value; and

incrementing a profile indicator [[at]] associated with the record.

15. (Currently Amended) The computer-implemented method of claim 12, wherein the periodically sampling of the set of registers further includes sampling, at the beginning of

a candidate reuse region, set-values in ones of the set ~~the plurality~~ of registers ~~at the beginning of a candidate reuse region~~, the plurality of registers being input registers to the candidate reuse region.

16. (Previously Presented) A computer-implemented method comprising:
identifying a candidate load instruction in a software program;
instrumenting the software program to, when executed, sample a location-value every S occurrences of the candidate load instruction, wherein S is an integer greater than 1;
storing an occurrence frequency of the location-value into a data structure; and
executing the software program.

17. (Currently Amended) The computer-implemented method of claim 16, wherein the instrumenting of the software program includes,
inserting count instructions in the software program to count a number of times the location-value is sampled; and
inserting track instructions in the software program to keep track of top location-values.

18. (Currently Amended) The computer-implemented method of claim 16 further comprising:
identifying a group of control equivalent candidate region entries and candidate load instructions in the software program;
inserting predicate instructions in the software program prior to ones of the group, wherein the predicate instructions set a predicate register every S occurrences; and
inserting profiling instructions in the software program at each of the control equivalent candidate region entries and candidate load instructions, wherein the profiling instructions are predicated on the predicated register.

19. (Original) The computer-implemented method of claim 17 wherein the candidate region includes a plurality of candidate load instructions, each of the plurality of load instructions being predicated on a common predicate register.

20. (Currently Amended) The computer-implemented method of claim 17, wherein the inserting of the track instructions to keep track of top location-values includes inserting sampling instructions configured to profile the top N occurrences of location-values, where N is an integer.

21. (Currently Amended) A machine readable medium including instructions, which when executed by a machine, cause the machine to perform operations according to the computer implemented method of claim 16. ~~for a method of profiling software, the method comprising:~~

~~identifying a candidate load instruction in the software;~~

~~instrumenting the software to, upon execution, sample a location-value every S occurrences of the candidate load instruction, wherein S is an integer greater than 1; and~~

~~executing the software.~~

22. (Currently Amended) The machine readable medium of claim 21, wherein the instrumenting of the software includes ~~comprises~~ inserting count instructions in the software to count a number of times the location-value is encountered.

23. (Currently Amended) A computer-implemented method comprising:

selecting candidate reuse regions within a software program; and

selecting reuse regions from the candidate reuse regions ~~within a software program~~, the selecting of the reuse regions including,

periodically sampling set-values for ones of the candidate reuse regions to produce a probability of occurrence of ~~set of~~ top set-values, wherein each of the set-values includes values of input registers for one of the candidate reuse regions;

~~storing an occurrence frequency of each of the top set-values into a data structure;~~ and

basing the ~~selecting~~ selection of the reuse regions ~~as a function of~~ on the probability of occurrence ~~frequency~~ of the top set-values.

24. (Previously Presented) The computer-implemented method of claim 23, wherein sampling the set values includes, representing each set-value as a single value; and accessing a data structure as a function of the single value to modify a profile indicator.

25. (Currently Amended) The computer-implemented method of claim 24, wherein the ~~accessing a~~ data structure ~~comprises accessing a data structure~~ is at least as large as a number of expected reuse instances.

26. (Previously Presented) The computer-implemented method of claim 23, wherein selecting the reuse regions further includes marking as reuse regions those candidate reuse regions having a finite number of set-values that have a probability of occurrence greater than a threshold.

27. (Currently Amended) A machine readable medium including instructions, which when executed by a machine, cause the machine to perform operations according to the computer implemented method of claim 23. ~~for a method of selecting reuse regions within a software program, the method comprising:~~

~~periodically sampling set-values for candidate reuse regions to produce a set of top set-values, wherein the sampling occurs during execution of the software program; and~~

~~selecting reuse regions as a function of occurrence probabilities of the top set-values.~~

28. (Previously Presented) The machine readable medium of claim 27, wherein sampling the set-values includes,

representing each set-value as a single value; and

accessing a data structure as a function of the single value to modify a profile indicator.

29. (Currently Amended) The machine-readable medium of claim 27 further including instructions, which when executed by a machine, cause the machine to ~~further comprising:~~

~~identifying~~ identify a candidate load instruction within the candidate reuse region; and

~~instrumenting~~ instrument the software to profile location-values for the candidate load instruction.

30-35. (Canceled)

36. (Previously Presented) The computer-implemented method of claim 16, wherein S is chosen so that a statistically valid number of location-values are sampled.

37. (Currently Amended) The machine readable medium of claim 9, wherein, during the execution, the ~~periodic~~ sampling is performed ~~includes sampling the set-value~~ every S occurrences of the set-values, and wherein S is an integer greater than 1.

38. (Canceled)

39. (Currently Amended) An apparatus comprising:

input registers to store input values of one of a set of candidate reuse regions of a software program; and

a profiling mechanism to select a computation reuse region from the set of candidate reuse regions, wherein the selecting includes instrumenting the software program to, when executed, obtain set-values of the candidate reuse regions, each of the set-values including ~~the~~ values of ~~the~~ input registers ~~every S occurrences of the one~~ of one of the set of candidate reuse regions~~, wherein S is an integer greater than 1,~~ and wherein the computation reuse region is selected based on an occurrence frequency of the set-values ~~the obtained values of the input registers~~.

40. (Currently Amended) The apparatus of claim 39, wherein the selecting also includes combining ~~each of the~~ values of the input registers of one of the candidate reuse regions ~~register values~~ into a single value.

41. (Previously Presented) The apparatus of claim 40, wherein the combining includes folding each of the input register values to create folded values and concatenating the folded values.

42. (New) The machine-readable medium of claim 21, wherein the instrumenting of the software includes inserting track instructions in the software program to keep track of top location-values.

43. (New) The computer implemented method of claim 3, wherein during the execution, the sampling is performed every S occurrences of the set-values, and wherein S is an integer greater than 1.

44. (New) The computer implemented method of claim 3 further comprising, for each set-value, combining each of the input register values into a single value.

45. (New) The computer-implemented method of claim 44, wherein the combining of each of the input register values into a single value includes:
folding each of the input register values to create folded values; and
concatenating the folded values.

46. (New) The machine readable medium of claim 9 further including instructions, which when executed by a machine, cause the machine to, for each set-value, combine each of the input register values into a single value.